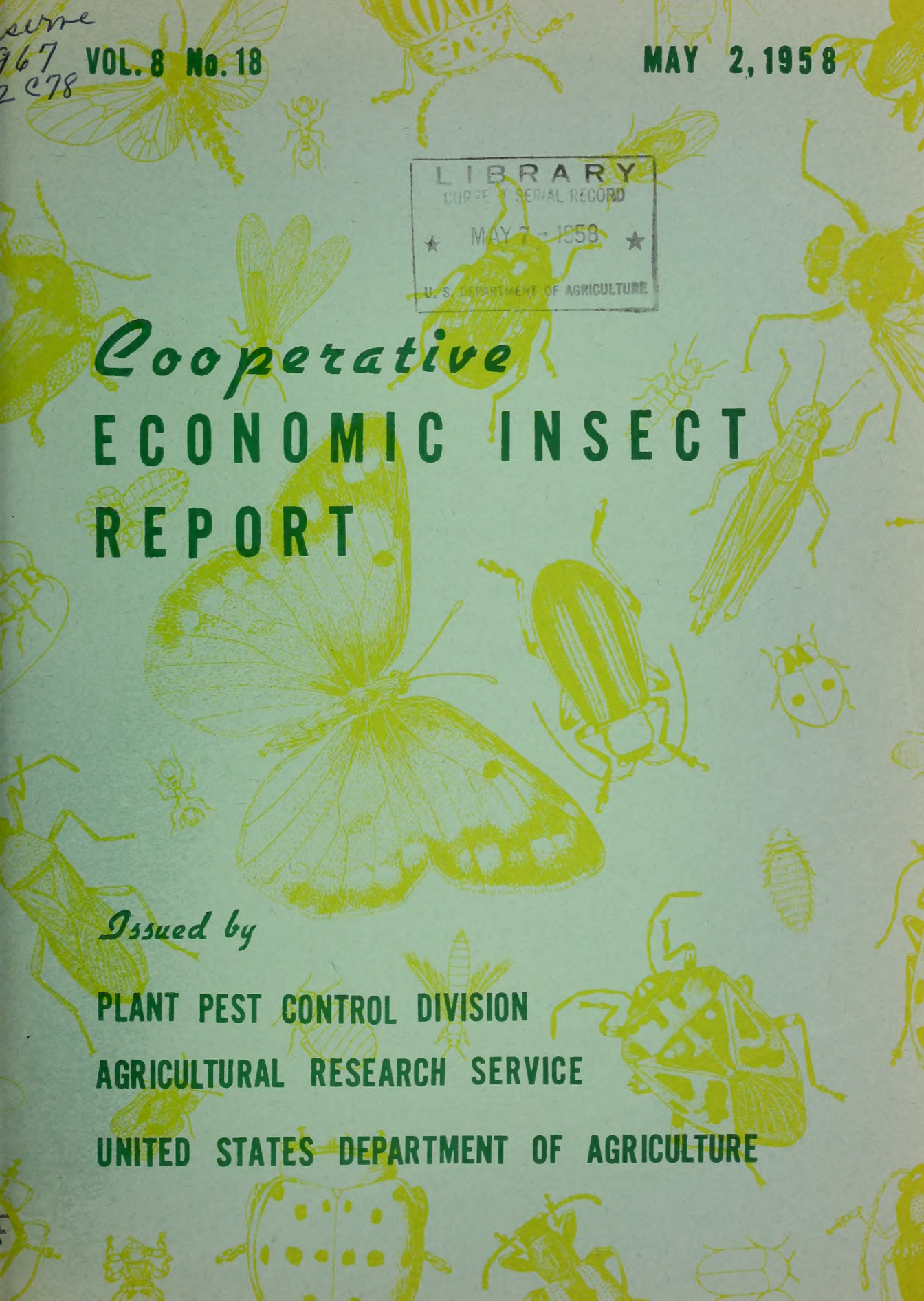


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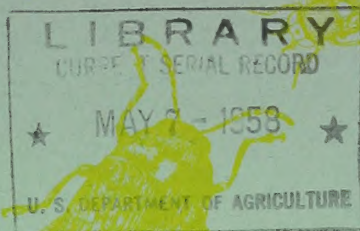
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MAY 2, 1958



Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

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United States Department of Agriculture
Washington 25, D. C.

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

GRASSHOPPERS (*Trimerotropis* spp.) abundant in Utah and Nevada. Initial hatch of *Aulocara elliotti* in Nebraska. (p. 335). Winter survival of EUROPEAN CORN BORER 70-75 percent in Pennsylvania. (p. 335).

FLEA BEETLES damaging corn in Oklahoma and Texas. (p. 335). No GREENBUG problem indicated for panhandle area of Texas. Infestations remain constant in Alabama, but reduced in southern and central Oklahoma. (p. 335).

CHINCH BUG moving into corn in Oklahoma, could become a problem in Cleveland County. (p. 336). Heavy infestation of ENGLISH GRAIN APHID indicated in north central Texas. (p. 336).

PEA APHID increasing in Maryland, Alabama and Oklahoma. (p. 338). SPITTLEBUGS abundant in Pennsylvania; hatching in Illinois. (p. 339).

SPOTTED ALFALFA APHID warrants control in southern New Mexico. Abundance of winged forms may indicate trouble further north later. (p. 339).

STINK BUGS increasing in southern fruit areas of Illinois and Indiana. (p. 340). RED-BANDED LEAF ROLLER expected to be serious in Virginia apple orchards during 1958. (p. 340).

Second Outlook statement on BEET LEAFHOPPER conditions. (p. 342). Serious infestations of *Myzus ascalonicus* on strawberries in Washington. (p. 344).

More live PINK BOLLWORM larvae than expected in four northeastern Texas counties. (p. 345).

Distribution of ASIATIC OAK WEEVIL. (p. 347).

New county records and extensions of IMPORTED FIRE ANT infestations. (p. 349).

CORRECTIONS (p. 350).

INSECTS not known to occur in the United States. (p. 355).

SUMMARY OF INSECT CONDITIONS - 1957 - INDIANA. (p. 351).

WEATHER OF THE WEEK ENDING APRIL 28

Numerous low pressure systems and several cold air intrusions were responsible for the greatest variety of weather conditions during any week of the spring season to-date. Frequent and widespread precipitation outside the Far Southwest sent streams out of their banks in several sections of the Nation. Late-season snows fell in the North and West. Many sections of the South were visited by thunderstorms, with damaging wind and hail and some by tornadoes. Temperatures fluctuated considerably, sometimes sharply. A good example occurred in Kansas where Sedan and Independence reported 91° on the 23d, the warmest day so far this spring in the eastern part of the State, and Goodland in the northwestern section of the State recorded a new record late-season low of 21° on the 24th.

The most extensive storm of the week crossed the Southwest on the 22d and 23d, with high winds whipping up dust in sections of the southwestern Great Plains as well as causing some crop and property damage. Cold air following in behind the storm as it moved northeastward reduced temperatures to freezing as far south as Utah, Colorado, and Kansas, and precipitation changed to snow. One of the heaviest snowstorms of record occurred in extreme south central Montana on the 23d and 24d when the storm dumped 55 inches on Red Lodge and 60 inches on Nye and Mouat Mine. Up to 3 feet of snow fell in the Big Horn Mountains of Wyoming, and glaze damaged power and communication lines in parts of the State. Salt Lake City, Utah, had its heaviest 24-hour April snowfall of record on the 23d when 15 inches were measured at the airport. An inch of snow fell at several stations in northwestern Kansas and 1 to 4 inches in northern Wisconsin.

Temperatures for the week averaged above normal in the Atlantic Coastal States, extreme southern areas, and along the southern California coast, with departures of 3° at San Diego, Calif., 6° at El Paso, Tex., 6° at New Orleans, La., 5° at Richmond, Va., and 9° at Caribou, Maine. The week was relatively cool elsewhere, averaging as much as 15° below normal at Sheridan, Wyo. (Summary supplied by U. S. Weather Bureau).

WEATHER BUREAU 30-DAY OUTLOOK

MAY 1958

The Weather Bureau's 30-day outlook for May calls for temperatures to average below seasonal normals over the northern half of the nation lying between the Rockies and the Appalachians. Above normal temperatures are indicated in West Coast, Gulf and South Atlantic States, as well as New England. In unspecified areas near normal temperatures are anticipated. Large week-to-week fluctuations are indicated over most areas. Precipitation is expected to equal or exceed seasonal normals over most of the nation except for subnormal amounts along the Pacific and Gulf Coasts and in the Northern Plains.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price \$4.80 a year, \$2.40 a half year.

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - NORTH DAKOTA - Survey in southeastern area of State show high percentage of eggs in coagulated stage of development. (N. D. Ins. Rpt.). ALABAMA - Schistocerca americana activity increasing in wheat fields, Autauga County. Infestations observed were light. (Grimes). KANSAS - No nymphs observed in any central, east central, southeast or south central counties. (Matthew, April 21-26). NEBRASKA - Initial hatch of Aulocara elliotti has occurred in southern areas. Egg development retarded by weather conditions. (Andersen). UTAH - Winged forms, largely Trimerotropis spp., unusually abundant for so early in season in Washington, Kane and parts of Iron Counties. (Knowlton). NEVADA - Heavy populations of Trimerotropis pallidipennis invaded Las Vegas area, Clark County. (Bechtel).

EUROPEAN CORN BORER (Pyrausta nubilalis) - NORTH CAROLINA - Average 5 larvae and 6 pupae per 50 stalks in Weeksville area, Pasquotank County. Nearly 100 percent of stalks infested in fall of 1957 in area of heavy potato production. (Farrier). PENNSYLVANIA - Spring survey shows 70-75 percent survival in corn state-wide. (Sleesman).

MORMON CRICKET (Anabrus simplex) - NEVADA - Second-instar nymphs in Rabbithole and Seven Troughs area, Pershing County. (Bechtel).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - MISSOURI - Mortality of overwintering larvae very high in all infested southwestern counties with only 4 live larvae found in 250 girdled stalks examined. (Kyd, Thomas).

FLEA BEETLES - OKLAHOMA - Chaetocnema denticulata causing extensive damage to corn in 14 counties. Populations on corn seedlings in low-lying soil commonly exceed 10 per plant, numbers lighter in upland soils. (Flora, Coppock, Vick). TEXAS - Scattered reports of small corn being killed by attack of a flea beetle. (Turney). Severe damage to corn in Hunt County. (Hawkins). C. pulicaria damaging corn in north central area with as many as 8 beetles taken from seedling plants. (Chada). ILLINOIS - C. pulicaria averaged 22 per 100 sweeps in bluegrass in eastern section and 0 in northeast. (Ill. Ins. Rpt.).

A BILLBUG - GEORGIA - Moderate to heavy on corn in Lowndes, Grady and Laurens Counties. (Johnson, George, Shurling).

Small Grain Insect Survey, Texas: During survey conducted in 12 high plains counties GREENBUG was found in Deaf Smith and Castro Counties but numbers considerably less than in February, averaging 10 per linear foot in Castro County. Predators were easily found and increasing. There should be little or no problem in the panhandle area this season. BROWN WHEAT MITE was negative. An occasional ARMY CURWORM was found throughout the survey. (Daniels).

GREENBUG (Toxoptera graminum) - ALABAMA - Infestations remain constant (10-20 per 10 sweeps) in most areas. (Grimes). KANSAS - No infestations found in any barley and wheat fields surveyed in central, south central, east central and southeastern areas of State. (Matthew). OKLAHOMA - Scattered infestations damaging many fields of volunteer oats throughout central and south central areas, with little spread. Damage to wheat generally very light in all sections. Numbers considerably reduced in central and southern areas. (Coppock). Average 50-150 per linear foot in Blaine County barley and wheat, higher at margins. (Owens). UTAH - Few on barley at St. George, Washington County. (Knowlton). TEXAS - Scattered spot infestations in some fields in Collin and Hunt Counties have been maintained by cool, wet weather. (Chada).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Heavy widely scattered populations in small grains throughout State. (Coppock, Vick). TEXAS - Populations greatly reduced in most north central area fields. (Chada).

ARMYWORM (Pseudaletia unipuncta) - LOUISIANA - Six to 13 per 100 sweeps on oats and other grasses Tensas Parish. Predominantly second-instar larvae. (Spink). MISSISSIPPI - Small larvae average 1-5 per square foot in oat fields, Leflore County. (Burton). TEXAS - Six per square foot in heavy growth of oats and vetch in Kaufman County. (Hawkins).

BROWN WHEAT MITE (Petrobia latens) - COLORADO - Averaged 1-4 per plant in one field, Baca County. (Exp. Sta.)

CHINCH BUG (Blissus leucopterus) - KANSAS - Counts averaged 2 per 25 sweeps in barley fields in Sedgwick, Harper and Kingman Counties. Few found in Marshall County indicating break in hibernation. (Matthew). OKLAHOMA - Have moved into young corn in central and south central counties. Could become serious in Cleveland County where several fields averaged 3-5 adults per plant. Lighter counts in other central and south central counties. (Coppock, Vick).

CORN LEAF APHID (Rhopalosiphum maidis) - UTAH - Moderately numerous in Washington County barley fields. (Knowlton). TEXAS - Heavy in barley with damage in several fields in north central area. (Chada).

ENGLISH GRAIN APHID (Macrosiphum granarium) - KANSAS - Counts 1-7 per 25 sweeps nearly all wheat and barley fields in central, east central, southeastern and south central counties. (Matthew). MISSOURI - Common most small grain fields southwestern area. Counts 1-12 per linear foot. Few rye fields averaged 120 to 175 in Jasper County. (Kyd, Thomas). OKLAHOMA - Generally light in small grain, central and south central counties, up to 700 per linear foot in western areas. (Coppock, Vick, Hatfield). TEXAS - Rapidly building up in wheat fields in north central area. Heavy head infestation indicated. (Chada).

WIREWORMS - IDAHO - Infestation of Ctenicera pruinina reported from a dryland grain field near Idaho Falls, Bonneville County, on April 18 was severe enough to warrant controls prior to seeding with potatoes. (Portman). SOUTH DAKOTA - Infestations of Limonius sp. in spring wheat in several north central and northeast counties averaged approximately 1 larva per linear foot of row. (Hantsbarger).

A WHEAT STEM MAGGOT (Hylemya cerealis) - COLORADO - Averaged 1-3 per wheat crown with 1 crown in 15 infested, Adams County. (Colo. Ins. Det. Comm.).

WHITE GRUBS - NEW MEXICO - Heavy infestations in lawns at Las Cruces, Dona Ana County. (N. Mex. Coop. Rpt.).

SUGARCANE BORER (Diatraea saccharalis) - LOUISIANA - Egg masses averaged 4 per 100 plants in Terrebonne, St. Charles and Assumption Parishes and first-instar larvae were present in the last two parishes. First evidence of Trichogramma parasitism reported in Assumption Parish. (Hensley, Spink).

ALFALFA CATERPILLAR (Colias philodice eurytheme) - IDAHO - Light larval infestations in alfalfa fields in Aberdeen area, Bingham County. (Bishop). DELAWARE - Full-grown larvae on alfalfa, Kent County. (MacCreary, Conrad).

ALFALFA WEEVIL (Hypera postica) - MARYLAND - Adults averaged 5-10 per 10 sweeps on alfalfa, Queen Annes and St. Marys Counties. Larval damage conspicuous in eastern and southern sections. (U. Md., Ent. Dept.). NORTH CAROLINA - New counties found infested are Buncombe, Haywood, Henderson and Polk. Feeding on vetch in Carteret County and average 80-100 larvae per 100 sweeps in Rowan County. Nearly destroyed untreated field in Harnett County. Treatments successful where used. (Jones, Farrier). DELAWARE - Two to 5 adults per

10 sweeps. Third-instar larvae in Sussex County. (MacCreary, Conrad). VIRGINIA - Damage to alfalfa varies considerably over most of the State. Indications adult emergence has reached peak in Rappahannock, Culpepper, Fairfax, Page and Rockingham Counties. (Morris). Larvae general in Stafford County, some infestations severe. (Beck). WEST VIRGINIA - Young larvae in alfalfa tips, Jefferson and Berkeley Counties. (W. Va. Ins. Sur.). PENNSYLVANIA All stages abundant in alfalfa in south central area. (Pepper). Larvae feeding on plant tops, Bedford County. (Udine). NEW JERSEY - Adults active in alfalfa fields. Few larvae in southern areas, very little feeding generally. (Ins.-Dis. Newsl.). MASSACHUSETTS - Larvae collected on alfalfa, Hampden County. (Lavigne). NEBRASKA - Active most alfalfa fields, Scottsbluff area, Scotts Bluff County. (Hagen). UTAH - Larvae in Washington County alfalfa, no damage evident. (Knowlton). IDAHO - Adults active in several fields in Aberdeen area of Bingham County. Populations averaged 4 per crown in 1 field to less in other fields examined. Adults mating April 16. (Bishop). Averaged 2 per 10 sweeps in untreated alfalfa in Notus area, Canyon County. (Waters). COLORADO - Non-economic in Otero, Larimer, Weld and Adams Counties. (Exp. Sta.).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - KANSAS - Serious injury to alfalfa locally in Rawlins County. (Matthew). NEBRASKA - Severely damaged new seeding of alfalfa in wheat, Lincoln County, with 6-8 larvae per square foot. Counts in alfalfa ranged 0.4-2.7 per square foot in Scottsbluff area, Scotts Bluff County, and 6-12, Dawes and Sheridan Counties. (Pruess, Hagen, Andersen). UTAH - Infestations well below average in alfalfa fields. (Knowlton).

A CLOVER HEAD WEEVIL (*Hypera meleus*) - GEORGIA - Averaging 10 per 100 sweeps on Tift County crimson clover. (Johnson).

CLOVER LEAF WEEVIL (*Hypera punctata*) - IDAHO - Larvae caused severe leaf damage to red clover in Kendrick area, Latah County. (Portman). KANSAS - Non-economic to light infestations of 3 larvae per crown in alfalfa in one east central, 3 southeast, 6 south central and 8 central counties. (Matthew). NEBRASKA - Averages 15 larvae and 7 adults per 100 sweeps in alfalfa in eastern third of State. (Andersen). VIRGINIA - Larvae widespread but light. (Morris). PENNSYLVANIA - All larval stages feeding on alfalfa and clover in south central areas. (Pepper). ILLINOIS - Larvae averaged 3 per square foot in clover and alfalfa in northeastern section and 2.6 in eastern section. Populations throughout State lower than for several years. Disease present but not reducing populations. (Ill. Ins. Rpt.). MASSACHUSETTS - First and second instars on crown leaves of alfalfa, Hampden County. (Lavigne). ALABAMA - Heavy infestations in 7 central counties; 0-6 larvae and 2-5 adults per sweep. (Grimes, S.Hays).

CLOVER ROOT CURCULIO (*Sitona hispidula*) - IDAHO - Adults active in all red clover fields examined in Latah County. Larval injury to roots evident on most plants examined. (Portman). Adults averaged 1 per 2 sweeps in red clover fields at Notus, Canyon County. (Waters). MASSACHUSETTS - Egg-laying in progress, some feeding damage evident, Hampden County. (Lavigne).

COWPEA APHID (*Aphis medicaginis*) - NEW MEXICO - Moderate on alfalfa at Ft. Sumner, De Baca County. (N. Mex. Coop. Rpt.).

CUTWORMS - IDAHO - Common in alfalfa at Aberdeen, Bingham County. (Bishop). SOUTH DAKOTA - Light infestations of *Agrotis* sp. in alfalfa in Brookings and Clark Counties; 1-4 larvae per square yard. (Hantsbarger). NEW MEXICO - Moderate in alfalfa fields near Hagerman and Dexter, Chaves County. (N. Mex. Coop. Rpt.). COLORADO - *Agrotis orthogonia* averaged 2 per linear foot in 1 wheat field in Baca County. (Exp. Sta.). ILLINOIS - Averaged 5 and 4 per 100 sweeps respectively in northeastern and eastern sections on bluegrass. (Ill. Ins. Rpt.).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - MARYLAND - Adults averaged 7 per 10 sweeps on red clover at Centreville, Queen Annes County. (U. Md., Ent. Dept.). ALABAMA - Light infestations in 7 central counties. (Grimes, S. Hays). VIRGINIA - Larval numbers very light in alfalfa fields, Giles, Bland and Tazewell Counties. (Morris).

LYGUS BUGS (Lygus spp.) - IDAHO - Averaged 1 per 2 sweeps in alfalfa and red clover throughout northern Canyon County. (Waters). COLORADO - Averaged 2 per 100 sweeps on alfalfa, Mesa County. Averaged 9 per 100 sweeps in Delta County. (Exp. Sta.). NEW MEXICO - Very abundant in some alfalfa fields, Dona Ana and Sierra Counties, with 1 field near Arrey, Sierra County, Averaging 1 adult and 2 nymphs per sweep. (N. Mex. Coop. Rpt.). UTAH - Above normal populations of L. elisus and L. hesperus in alfalfa and mustards wherever examined. (Knowlton). KANSAS - In few alfalfa fields in Sumner and Harper Counties. (Matthew). NEBRASKA - L. lineolaris continues to build up in eastern third of State, 22 per 100 sweeps in alfalfa. (Andersen). MISSOURI - L. lineolaris adults average 0.4-1 per sweep in alfalfa in southwest area. (Kyd, Thomas). PENNSYLVANIA - L. lineolaris abundant in legume hay in south central area of State. (Pepper). MASSACHUSETTS - L. lineolaris averaged 5 adults per 100 sweeps, Hampden County. (Lavigne).

PEA APHID (Macrosiphum pisi) - MARYLAND - Numbers increasing in most sections, with no serious infestations noted. (U. Md., Ent. Dept.). NORTH CAROLINA - Averaged 100-150 per 100 sweeps on alfalfa in Rowan County. (Farrier). ALABAMA - Infestations increasing from medium to heavy in central areas, with counts ranging 50-500 per 10 sweeps. (Grimes, S. Hays). VIRGINIA - Present in all alfalfa fields surveyed. (Morris). TENNESSEE - Heavy infestations on alfalfa. Fungus killing many. (Mullett). ILLINOIS - Averaged 104 in northeastern section and 33 in eastern section per 100 sweeps in clover and alfalfa. (Ill. Ins. Rpt.). TEXAS - Light in vetch, Kaufman County. (Hawkins). Averaged 200 per 10 sweeps in one alfalfa field and about 10 per 10 sweeps in another field. (Turney). OKLAHOMA - Steadily increasing throughout State, most central and southern alfalfa fields averaging 100-300 per 10 sweeps. Very heavy infestation noted on vetch in McClain County, with 1 field averaging thousands per 10 sweeps. (Coppock, Vick). Heavy infestations in Jackson County (Hatfield) and marked increase in Stillwater area, Payne County (Bieberdorf). MISSOURI - Counts considerably within State, averaging 5-7 per sweep in central third of State and 9-112 per sweep in extreme southwestern counties. Fungus disease becoming common in most fields. (Kyd, Thomas). NEBRASKA - Averages 20 per 100 sweeps in alfalfa and sweetclover in eastern third of State. (Andersen). KANSAS - Non-economic to light in 3 southeast, 6 south central and 8 central counties, counts generally 5-600 per 25 sweeps with 100 per sweep in some fields in southern counties. Parasites and predators at low levels. (Matthew). WISCONSIN - First specimen found in alfalfa in Dodge County. (Wis. Coop. Sur.). UTAH - Abundant to threatening in many Washington County fields, severe in Kane County. (Knowlton). COLORADO - Average 4 per 100 sweeps at Austin, Delta County. (Exp. Sta.). NEW MEXICO - Light to moderate in alfalfa in southern counties. Populations building up rapidly. (N. Mex. Coop. Rpt.). NEVADA - Populations abnormally heavy on alfalfa in Clark and southern Nye Counties, with 74 acres of alfalfa sprayed in Pahrump Valley. (Zoller).

POTATO LEAFHOPPER (Empoasca fabae) - KANSAS - None found in alfalfa fields surveyed in 1 east central, 3 southeast, 5 south central and 8 central counties. (Matthew).

SPITTLEBUGS (Philaenus spp.) - PENNSYLVANIA - Well hatched, very abundant in legume hay, south central area, well up on clover and alfalfa, spraying begun, southwestern areas. (Udine). TENNESSEE - Present at higher altitudes in eastern part of State on alfalfa and clover. (Mullett). MARYLAND - Small nymphs of P. leucophthalmus in light numbers in red clover at Centreville, Queen Annes County. (U. Md., Ent. Dept.). DELAWARE - Newly hatched

P. leucophthalmus nymphs on clover, southern New Castle County. (MacCreary, Conrad). ILLINOIS - Nymphs of P. leucophthalmus emerging throughout State, averaging 11 per 100 stems in clover and alfalfa in northeast, and 16 in eastern sections. (Ill. Ins. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - KANSAS - Averaged 1-2 per 25 sweeps in few alfalfa fields, Sumner and Harper Counties, and along roadside embankments in localized areas, Kingman and Pratt Counties. Aphids recovered from plants along roadside embankments in southern Pottawatomie County. (Simpson). Collected from alfalfa along roadside embankments at single locations in Cowley and Elk Counties. (Martinez, Smart). Averaged 1 per 10 sweeps on alfalfa in few fields, Barber County. (Marvin). MISSOURI - None found in any area of State. (Kyd, Thomas). OKLAHOMA - Numbers remain light in central and south central fields with none found in most fields. (Coppock, Vick). No increase in Stillwater area, Payne County. (Bieberdorf). UTAH - Present but scarce in Washington, Kane and western Millard Counties. (Knowlton). NEVADA - Populations remain low in southern areas. (Zoller). NEW MEXICO - Severe enough to warrant control in alfalfa fields, Dona Ana and Eddy Counties. Winged forms very numerous. (N. Mex. Coop. Rpt.). COLORADO - None found in Baca, Prowers, Bent, Otero, Crowley and Pueblo Counties. (Exp. Sta.).

SPOTTED CUCUMBER BEETLE (Diabrotica sp.) - KANSAS - Averaged 3 per 100 sweeps in alfalfa, Sumner and Harper Counties. (Matthew).

SWEETCLOVER WEEVIL (Sitona cylindricollis) - NEBRASKA - Populations heavy in eastern portions of State, 5-7 per crown in sweetclover fields. (Andersen).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - UTAH - Moderately numerous in alfalfa fields, Washington County. (Knowlton).

YELLOW CLOVER APHID (Therioaphis trifolii) - ILLINOIS - Present in red clover in eastern area. (Ill. Ins. Rpt.).

YELLOW SUGARCANE APHID (Sipha flava) - LOUISIANA - Counts ranged from 1 to many per plant in sugarcane examined, with 5 percent infestation in Avoyelles Parish and 12 percent in West Baton Rouge Parish. (Spink).

JAPANESE BEETLE (Popillia japonica) - INDIANA - Grub mortality about 75 percent at Kentland, Newton County. (Gould, April 18).

SOYBEAN CYST NEMATODE (Heterodera glycines) - In Mississippi County, ARKANSAS 11 properties totaling 462 acres found infested, and in Camden County, NORTH CAROLINA, 2 properties totaling 204 acres found infested. One property in Camden County is 18 miles from other known infestations in county. In TENNESSEE, 5 properties in Lake County found infested. All five properties were follow-ups on U.S. Soil Testing Laboratory material. (PPC, Sou. Reg., Mar. Rept.).

SEED-CORN MAGGOT (Hylemya cilicrura) - ILLINOIS - Adults observed in northern area. (Ill. Ins. Rpt.).

FRUIT INSECTS

EUROPEAN RED MITE (Panonychus ulmi)- MARYLAND - Eggs abundant on apple twigs. (U. Md., Ent. Dept.). OHIO - Hatching began at Wooster, Wayne County, on April 18, with heavy hatch on April 24. (Cutright). VIRGINIA - Eggs hatching, normal abundance in northern apple orchards. (Hill). NEW JERSEY - No hatching observed. (Ins. Dis. Newsltr.). ILLINOIS - Hatching at Carbondale, April 17. (Meyer). INDIANA - Hatching at Vincennes, April 21. (Hamilton). Hatching at Orleans. (Marshall). PENNSYLVANIA - P. ulmi and Tetranychus telarius fairly abundant in apple foliage in center of trees in south central area. (Pepper). NEW YORK - Occasional hatch observed in Ulster County. (N.Y. Wkly. Rpt.).

CLOVER MITE (Bryobia praetiosa complex)- OHIO - Eggs hatching on apple. (Cutright, April 17). UTAH - Very numerous some Washington County orchards. Hatching in Kane, Millard and northern Utah Counties; young mites and eggs conspicuous some orchards. (Davis, Knowlton).

ORCHARD MITES - IDAHO - Hatching on prunes, apples and Scotch pines, Canyon County. Prune and apple trees previously sprayed. Prune foliage 7-80 percent infested with 10-100 per leaf. Populations on apples and Scotch pines lower but severe. (Scott). VIRGINIA - Tetranychus schoenei present in apple orchards in northern area. (Hill).

APHIDS - WISCONSIN - Populations appear small in Madison orchards. (Wis. Ins. Sur.). VIRGINIA - Aphis pomi and Anuraphis roseus have hatched in northern apple orchards; populations normal. (Hill). WEST VIRGINIA - A. pomi numerous on apple in Jefferson and Berkeley Counties. (W. Va. Ins. Sur.). PENNSYLVANIA - Aphis pomi, Anuraphis roseus and Rhopalsiphum fitchii more abundant than usual on apple in south central area. Stem mothers reproducing. Myzus cerasi hatching on cherry in south central area. (Pepper). NEVADA - Populations of Myzus cerasi increasing on cherry in Reno area, Washoe County. (Bechtel, Apr. 18). OKLAHOMA - Eriosoma lanigerum infesting wounded trees in Pontotoc County. (Coppock, Vick). UTAH - A. pomi and E. lanigerum infesting apple trees in Washington County. Myzus persicae curling peach leaves some places. Severely curling plum foliage in lower areas of Washington County. Anuraphis persicae-niger damaging some young peach orchards in southern area. (Knowlton).

CATFACING INSECTS - DELAWARE - Adults of Euschistus variolarius on peach trees, Kent County, April 21. (MacCreary, Conrad). ILLINOIS - Populations of stink bugs increasing on peaches at Carbondale. Lygus lineolaris past peak of abundance. (Meyer). INDIANA - More than normal damage to peaches by L. lineolaris expected this year at Orleans. Feeding by stink bugs should increase, week beginning April 23. (Marshall). PENNSYLVANIA - Fairly abundant in apple trees in south central area. (Pepper).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana)- MARYLAND - Adults emerged at Hancock, Washington County (April 17) and egg masses were noted on the 19th. (U. Md., Ent. Dept.). VIRGINIA - Egg masses very prevalent, varying from light to very heavy. Expected to be very serious in apple orchards during 1958. (Hill). WEST VIRGINIA - Emergence on apple light in Berkeley County. (W.Va. Ins. Sur.). NEW JERSEY - Moths abundant; few egg masses found in southern area, April 21. (Ins. Dis. Newsltr.). ILLINOIS - Still laying eggs; fresh masses found April 22 at Carbondale. (Meyer). PENNSYLVANIA - Eggs fairly abundant on apple in south central area. Adults very abundant. No hatching yet. (Pepper). NEW YORK - First adult taken in traps in eastern area, April 21. (N.Y. Wkly. Rpt.).

CODLING MOTH (Carpocapsa pomonella) - NEW JERSEY - Pupation begun in Burlington County, April 21. (Ins. Dis. Newsltr.). INDIANA - First pupa found April 21 at Vincennes. (Hamilton).

UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) - VIRGINIA - Adults emerging in apple orchards in northern area. (Hill).

EASTERN TENT CATERPILLAR (Malacosoma americanum)- OHIO - Numerous young colonies in northeastern orchards. (Cutright). OKLAHOMA - Common in southern counties in native plums, larvae mature, present in north central counties. (Coppock, Vick).

SPRING CANKERWORM (Paleacrita vernata)- OKLAHOMA - Very abundant on plum, peach, apple, elm and oak in north central and south central areas. All larval instars present in northern counties. (Coppock).

PEACH TWIG BORER (Anarsia lineatella) - UTAH - Damage conspicuous at Hurricane; noticeable elsewhere in Washington County. (Knowlton).

PEAR PSYLLA (Psylla pyricola) - CALIFORNIA - Light in Grass Valley, Nevada County. (Cal. Coop. Rept.). NEW YORK - Nymphs observed few orchards in Rockland County. (N.Y. Wkly. Rpt.).

CALIFORNIA PEAR-SLUG (Pristiphora californica)- CALIFORNIA - Light on pear in Kelseyville, Lake County. (Cal. Coop. Rept.).

PLUM CURCULIO (Conotrachelus nenuphar) - DELAWARE - Adults on peach trees, Kent County, April 21. (MacCreary, Conrad). VIRGINIA - Emerging from hibernation in northern area apple orchards. (Hill). ILLINOIS - First adults of season found at Carbondale, April 21. Expected to increase rapidly. (Meyer). INDIANA - First adults jarred from trees at Vincennes, April 21. (Hamilton). TEXAS - Large populations some plum orchards in Cherokee County. (Turney). GEORGIA - Egg development begun in females at Fort Valley, April 8. Some adults full size, but not quite ready for deposition in hosts. Deposition will take place in peaches when they are exposed from shucks. (Snapp, Apr. 17). Adults left hibernation in numbers, as many as 2 per tree in one commercial orchard on April 17. (Snapp, Apr. 21).

SCALES - CALIFORNIA - Light infestations of Lepidosaphes destefanii and Pollinia pollini found on olive near Cloverdale, Sonoma County, extending known range in California approximately two miles north and west. (Cal. Coop. Rept.).

CURRENT FRUIT FLY (Epochra canadensis)- OREGON - Emerged from cages in Marion County week of April 21. (Every).

PECAN NUT CASEBEARER (Acrobasis caryae) - TEXAS - Overwintering larvae in last instar; highly parasitized in south central area. (Turney).

BURROWING NEMATODE (Radopholus similis) - FLORIDA - Initial surveys in 80 groves found 18 infested. Of 150 citrus nurseries inspected, 7 found infested. (PPC, Sou. Reg., Mar. Rept.).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - Trap operations normal in Mexicali district, but reduced in Tijuana district due to rain during March. In western area, 1,313 traps were in operation on which 4,602 inspections were made. No fruit flies were found. Spraying operations were resumed on March 18 in Tijuana, Baja California. During March, 4,448 host plants were sprayed on 1,284 properties. (PPC, Mex. Reg.).

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) - MEXICO - In eastern area, 250 traps operated and inspected on 15-day intervals, no specimens found. (PPC, Mex. Reg., Mar. Rept.). LOUISIANA - 106 combination fruit fly traps in operation during month, mostly in vicinity of Buras, Plaquemines Parish. Continued operation of traps reported in Baldwin and Mobile Counties, ALABAMA. No suspicious specimens collected. (PPC, Sou. Reg., Mar. Rept.).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Surveys by National Blackfly Committee and PPC personal were conducted on 124,117 trees on 2,613 properties in the chemical control and non-infested zones. Total of 114 trees found infested on 23 properties. Locations where negative inspections made were Matamoros, Nuevo Laredo; Municipios Villagran and Mainero, Tamaulipas; Sabinas Hidalgo, Vallecillo, El Cercado and Gral. Teran, Nuevo Leon; San Luis Rio Colorado, Sonora; and Mexicali, Baja California. In chemical control zones, light to medium infestations were as follows: 8 in Municipio Hidalgo, Tamaulipas; 2 in Monterrey, 3 near Allende, 4 in vicinity of Montemorelos, 2 at Linares and one in Hualahuises, Nuevo Leon; and 3 at Hermosillo, Sonora. Infestations in Monterrey first found since March 1955. (PPC, Mex. Reg., Mar. Rept.). TEXAS - Surveys were conducted in Cameron, Hidalgo and Webb Counties. All previously known infested properties inspected in Brownsville area of Cameron County, and in Webb County, inspections were confined to city properties in Laredo where infestations found in 1955-56. Total of 32,392 trees inspected on 3,147 properties, all negative. (PPC, Sou. Reg., Mar. Rept.).

Citrus Insect Situation, Third Week of April, Lake Alfred, Florida - PURPLE SCALE reached high level with some further increase expected. FLORIDA RED SCALE activity unchanged, at high level, with an increase expected in next week or two. CITRUS RED MITE activity on old leaves declined but infestations on new leaves are increasing. Further increase on new leaves in expected. CITRUS RUST MITE activity was on increase, but little further change is expected on old leaves next week. Activity will increase on new leaves in May. SIX-SPOTTED SPIDER MITE infestations increased sharply and considerable further increase is expected, with the peak occurring after middle of May. APHID infestations are at peak, but will still be damaging on some severely frozen trees. (Pratt, Thompson, Johnson; Apr. 22).

TRUCK CROP INSECTS

BEET LEAFHOPPER (Circulifer tenellus) - NEVADA - Populations increased on tomato seedlings to 2.0-2.5 per square foot of row April 14-18 in Moapa Valley, Clark County. Averaged 0.3 per square foot of row April 7-11. (Dorst).

Second Statement of Beet Leafhopper Conditions in Utah, Western Colorado, Southern Nevada, Central Arizona and Southeastern California - 1958

Additional data have substantiated the information released CEIR 8(11):188 that spring dispersal of the beet leafhopper from the southern desert breeding grounds to the cultivated districts of south central and northern Utah and western Colorado will be large. The population in western Nevada is expected to be of moderate magnitude. This movement is expected to start by late April and will probably reach its peak by May 20. The shift in population to the cultivated districts of southeastern California and southern Arizona from adjacent desert areas started in March, is expected to be moderate and probably will continue until mid-April. The dispersal of leafhoppers to the adjacent cultivated districts of southern Nevada and southern Utah started in late March; additional movements are expected in April and the population is expected to be large. The local movement from breeding grounds of western Nevada, northern and eastern Utah, and western Colorado to the adjacent sugar beet and tomato districts is expected to be light to moderate. The movement is expected to start in early June. Approximately 25 percent of the overwintering leafhoppers collected from northwestern Arizona in February were carrying the curly top virus. Leafhoppers collected from other portions of southern breeding ground in February showed the number infective to be almost nil. Additional leafhoppers of the first and second broods collected in March and April in southern and western Arizona, southeastern California, southern Nevada and southern Utah show about 8 percent viruliferous. This was about twice that of 1957. In the northern breeding grounds of Utah approximately 6 percent were viruliferous and this was similar to that recorded for 1957.

The local breeding grounds in northern and eastern Utah, western Colorado and western Nevada include a potential acreage estimated at 75 square miles. The unit overwintering leafhopper population is about equal to that observed in 1957; however the host plant acreage is larger. The leafhopper contribution from the southern breeding grounds to the overwintering population is expected to be larger than for many years; however the unfavorable host plant conditions will probably make this unimportant. The beet leafhopper movements to adjacent cultivated districts is expected to be light to moderate. (Dorst, Knowlton)

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - NORTH CAROLINA - Adults active for 2 weeks prior to April 18, Duplin County. (Reid).

STRIPED CUCUMBER BEETLE (Acalymma vittata) - NORTH CAROLINA - First adults of season seen April 20, Wake County. (Farrier).

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - NORTH CAROLINA - Severe infestation on Irish potato breeding stock under glass, Wake County. (Scott, Farrier).

TOMATO CATERPILLARS - TEXAS - Tomato hornworms and tomato fruitworms increasing and causing damage to tomatoes in lower Rio Grande Valley. (Deer).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - NORTH CAROLINA - Injuring Irish potatoes in some areas, Duplin County. (Reid). GEORGIA - Light infestations of adults on tomatoes in Cook, Lowndes, Brooks and Thomas Counties; moderate on tomatoes in Colquitt County. Heavy deposition of eggs on tomatoes in aforementioned counties. (Johnson).

WHITE GRUBS (Phyllophaga spp.) - ALABAMA - Feeding on roots of cabbage plants in Russell County. (Grimes). INDIANA - Damaging melons and tomatoes in cold frames in Knox and Daviess Counties. Sod obtained from pasture. (Gould, Apr. 18).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - ALABAMA - Infestations serious on turnips in Russell County. (Grimes). TENNESSEE - Larvae attacking tomatoes in Anderson County. (Mullett).

HARLEQUIN BUG (Murgantia histrionica) - MISSISSIPPI - Heavy infestation on turnips, Lowndes County. (Hutchins).

FLEA BEETLES - NEW JERSEY - Active on crucifers. (Ins. Dis. Newsltr.). NEW MEXICO - Light infestation on lettuce near Artesia, Eddy County. (N. Mex. Coop. Rpt.). OKLAHOMA - Severely damaging tomatoes in Bixby area, Tulsa County. (Walton, Arbuthnot).

CABBAGEWORMS - NEW JERSEY - Adults active and laying eggs, April 18. (Ins. Dis. Newsltr.). ILLINOIS - Adults of Pieris rapae observed in northern area. (Ill. Ins. Rpt.). NEW MEXICO - Eggs and larvae of Trichoplusia ni abundant on untreated lettuce fields in Eddy and Dona Ana Counties. (N. Mex. Coop. Rpt.). GEORGIA - Light to moderate infestations of Plutella maculipennis on collards and cabbage in Brooks County. (Johnson).

CABBAGE APHID (Brevicoryne brassicae) - ALABAMA - Infestations heavy in Russell County. (Grimes).

MEXICAN BEAN BEETLE (Epilachna varivestis) - GEORGIA - Light to moderate infestations on beans in Brooks, Colquitt, Thomas and Grady Counties. (Johnson).

BEAN LEAF BEETLE (Cerotoma trifurcata) - ALABAMA - Heavy infestation on beans in Lee County. (Grimes). GEORGIA - Light to moderate infestations on beans in Brooks, Colquitt, Thomas and Grady Counties. (Johnson).

PEA LEAF WEEVIL (*Sitona lineata*)- OREGON - Infesting garden peas in Silverton area, Marion County. This is an eastern extension of the known range. (Iarson).

LEAFHOPPERS (*Empoasca* spp.)- NEW MEXICO - Moderate infestations on lettuce in Eddy and Dona Ana Counties. Some stippling of leaves. (N. Mex. Coop. Rpt.).

GREEN PEACH APHID (*Myzus persicae*)- NEW MEXICO - Very light on lettuce in Eddy and Dona Ana Counties. (N. Mex. Coop. Rpt.).

CUTWORMS - ALABAMA - Damaging cabbage and beans in Russell County. (Grimes).
NEW MEXICO - Eggs light on lettuce near Artesia, Eddy County. (N. Mex. Coop. Rpt.).

ALFALFA LOOPER (*Autographa californica*) - CALIFORNIA - Infestations heavy in conjunction with *Peridroma margaritosa* on spinach in Patterson area of Stanislaus County. (Cal. Coop. Rpt.).

ONION MAGGOT (*Hylemya antiqua*)- IDAHO - Overwintering fly emergence increasing with populations reaching economic levels in some southwestern areas. (Scott).

ARTICHOKE PLUME MOTH (*Platyptilia carduidactyla*)- NEW MEXICO - Damaging artichokes at Mesilla Park, Dona Ana County. (N. Mex. Coop. Rpt.).

A SPRINGTAIL (*Onychiurus pseudofimetarius*)- CALIFORNIA - Heavy local populations on garlic in Santa Cruz area, Santa Cruz County. (Cal. Coop. Rpt.).

THRIPS - NEW JERSEY - Very active on overwintering onion patches. (Ins. Dis. Newsltr.). UTAH - *Thrips tabaci* marking onion tops at Washington. (Knowlton).

SPIDER MITES - INDIANA - Beginning to feed on strawberry plants at Orleans. (Marshall). TEXAS - Continue to damage tomatoes several fields in lower Rio Grande Valley. (Deer).

STRAWBERRY APHIDS - WASHINGTON - Serious infestations of *Myzus ascalonicus* on strawberries in single fields in Skagit, Whatcom and Snohomish Counties, April 10-17. Det. by Adison and L. M. Russell. First recorded on strawberry in North America in British Columbia in 1955. (Eide). CALIFORNIA - Heavy on strawberries in Chula Vista, San Diego County. (Cal. Coop. Rpt.).

CYCLAMEN MITE (*Steneotarsonemus pallidus*)- CALIFORNIA - Heavy on strawberry plants in El Cajon, San Diego County. (Cal. Coop. Rpt.).

STRAWBERRY LEAF ROLLER (*Ancyliis comptana fragariae*)- INDIANA - Attack on strawberries has been heavy at Orleans. (Marshall).

A STRAWBERRY WEEVIL (*Brachyrhinus rugosostriatus*)- CONNECTICUT - Collected in home in Branford during fall of 1957. Second report from State; first collection from New Britain, in 1950. (Johnson).

TOBACCO INSECTS

BUDWORMS - GEORGIA - *Heliothis* sp. light to moderate on field tobacco in 7 counties. (Johnson).

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) - TENNESSEE - Present generally in tobacco areas of State. (Mullett). GEORGIA - Light to moderate infestations on tobacco in field in 7 counties. (Johnson).

A TENDIPEDID - MARYLAND - Larvae abundant, causing injury to young tobacco plants in beds at Waldorf, Charles County. (U. Md., Ent. Dept.).

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - GEORGIA - First overwintered adult collected on tanglefoot trap. (Beckham). TEXAS - Overwintered weevils found in some test plots in Brazos County. (Atkins).

COTTON APHID (Aphis gossypii) - TEXAS - On young cotton in Burleson County but no damage evident. (Turney).

PINK BOLLWORM (Pectinophora gossypiella) - MEXICO - In State of Sinaloa, 662,517 cotton blooms were inspected in 130 fields; no pink bollworm found. During February and March, dead pink bollworm larvae were found in number of fields in Juarez, Delicias and Torreon zones. Inspections indicate a very high mortality, especially in State of Chihuahua. (PPC, Mex. Reg., Mar. Rpt). From February 11 to March 19, spot check of fields in 8 eastern OKLAHOMA and 4 ARKANSAS counties resulted in finding no pink bollworm larvae in either debris or standing stalks. Inspections were conducted in two other Oklahoma counties, which resulted in finding one larva from lint cleaner inspections in Tillman County. Limited inspections in northeastern and eastern counties of TEXAS revealed more live larvae than expected in Ellis, Falls, Limestone and McLennan Counties. This is considered unusual in view of the very wet fall and winter. (PPC, Sou. Reg., Mar. Rpt.).

Cotton Insects in Lower Rio Grande Valley, Texas: CUTWORM damage further diminished and SPIDER MITE situation remains about the same. Few fields in Cameron County reported to have THRIPS damage. FLEAHOPPERS have built up in north Willacy and north Hidalgo Counties. Some fields in Willacy County have BOLLWORMS feeding on terminals of young cotton. (Deer).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BARK BEETLES - NEVADA - Heavy emergence of Pityophthorus sp. from dead and injured pinon pines in Gardnerville - Holbrook areas, Douglas County. (Bechtel, Gallaway). COLORADO - Adults of Leperisinus aculeatus observed in flight at Fort Collins, Larimer County. (Ext. Sta.)

A CYNIPID - TEXAS - Infesting oak leaves and forming oak galls previously, now causing some of leaves to shed, Brazos County. (Turney).

ELM LEAF BEETLE (Galerucella xanthomelaena) - IDAHO - Adults leaving hibernation quarters in large numbers near New Plymouth, Canyon County. (April 14, Waters).

ELM SAWFLY (Cimbex americana) - NORTH CAROLINA - Local heavy infestation on water elms, Forsyth County. (Wright).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - INDIANA - Overwintering larvae constructing tents, Elkhart County. (Schuder).

DEODAR WEEVIL (Pissodes nemorensis) - ALABAMA - Large numbers in all stages in pine timbers, Lee County, with as many as 10 weevils per 3 feet of timber. (Grimes).

EUROPEAN ELM SCALE (Gossyparia spuria) - WEST VIRGINIA - Light on elms in Monongalia County. (W. Va. Ins. Sur.). UTAH - Serious in many localities. (Knowlton).

A GALL WASP (Dryophanta sp.) - NORTH CAROLINA - Several infestations on willow oak, Wake County. (Scott, Hunt, Farrier).

LEAFHOPPERS - NEW MEXICO - Adults and nymphs heavy on elms at Las Cruces, Dona Ana County. (N. Mex. Coop. Rpt.).

MAY BEETLES (Phyllophaga sp.) - ALABAMA - Damaging pecan and oak foliage in Marshall and Lee Counties. (Grimes).

MOORNING-CLOAK BUTTERFLY (Nymphalis antiopa) - NEVADA - Larval populations heavy on elms at Las Vegas, Clark County. (Zoller).

AN OAK LECANIUM (Lecanium quercifex) - NORTH CAROLINA - Infestation on willow oak, Wilson and Wake Counties. (Scott, Jones, Farrier).

PINE BARK APHID (Pineus strobi) - WEST VIRGINIA - Heavy on white pine seedlings in nurseries, Tucker County. (W. Va. Ins. Sur.).

PINE ENGRAVER (Ips pini) - PENNSYLVANIA - Considerable injury to Scotch and Virginia pines, Juniata County. Trees on decline. (Udine).

A SPRUCE NEEDLE MINER (Recurvaria piceaella) - PENNSYLVANIA - Killing needles of Norway spruce, Westmoreland County. (Udine).

TENT CATERPILLARS (Malacosoma spp.) - MARYLAND - Tents of M. americanum noticeable in wild cherry in all sections. (U. Md., Ent. Dept.). ALABAMA - Infestations of M. americanum increasing and larvae leaving tents to feed. (Flynn). Specimens of M. disstria collected in Baldwin County. (Hyche).

WISCONSIN - Winter egg band surveys indicate heavy infestations of M. disstria in southern two-thirds of Iron, extreme western Vilas, northwestern corner of Oneida, northern two-thirds of Price, eastern one-third of Rusk and extreme northwestern corner of Taylor Counties. Medium to light infestations will extend outward from this area to Douglas, Chippewa and Lincoln Counties. (Wis. Ins. Sur.). LOUISIANA - M. americanum very abundant in northern part of State and M. disstria abundant in Baton Rouge. (Spink). OREGON - M. disstria and M. pluviale emerging in Willamette Valley, week of April 20. (Goeden, Capizzi). VIRGINIA - Small tents of M. americanum present in host trees in northern and southwestern areas. (Morris). PENNSYLVANIA - M. americanum heavy in Dauphin County. (Sleesman). Very abundant on cherry and other trees, Westmoreland County (Udine) and in south central areas (Pepper). UTAH - Hatching in northern areas. (Brower, Knowlton). Infesting cottonwood trees along Virgin River, Washington County. (Knowlton). ILLINOIS - Malacosoma sp. larvae emerging in northern part of State. (Ill. Ins. Rpt.). NEW JERSEY - Hatched throughout the State, tents growing rapidly. (Ins.-Dis. Newsl.).

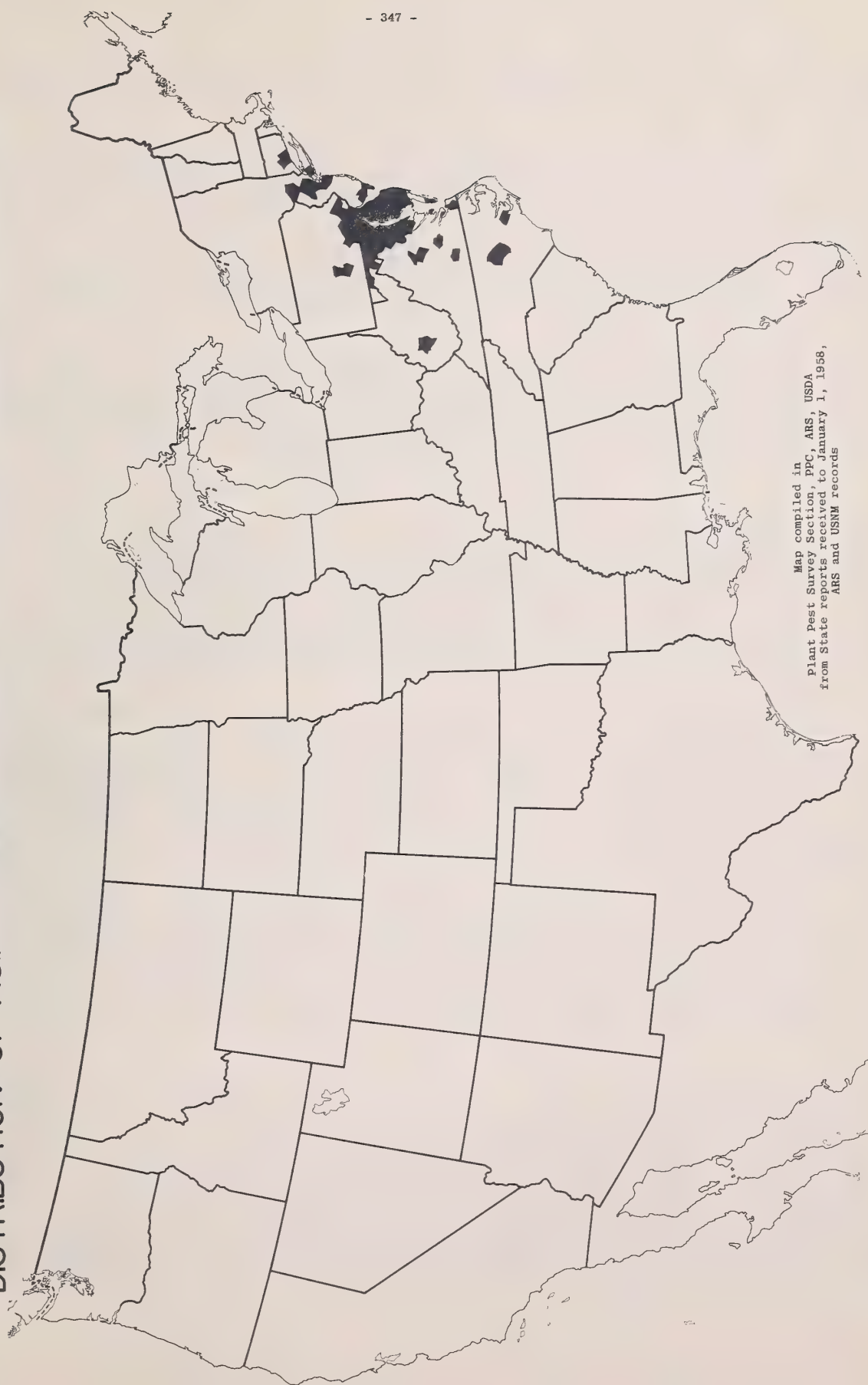
A WEEVIL (Pissodes approximatus) - PENNSYLVANIA - Christmas tree plantings to be sprayed for control in May. (Udine).

Some Forest Insects, Wisconsin: Heavy adult feeding by WHITE-PINE WEEVIL on Scotch and white pine reported in northeastern area on April 17, but larval populations of LARCH CASEBEARER appear light in same area. A ROOT COLLAR WEEVIL is causing damage in Adams County area. PINE NEEDLE SCALE populations appear quite high on some white pines in Madison area, Dane County. (Wis. Ins. Sur.).

APHIDS - ALABAMA - Aphis spiraeicola damage to spirea increasing. Several aphids attacking various types of roses in several areas of State. (Grimes). NORTH DAKOTA - Anuraphis viburnicola infesting snowball and cranberry in Fargo area, Cass County. (N. D. Ins. Rpt.). KANSAS - Infestations of an arborvitae aphid on ornamentals in some locations, Kearny County. (Gates). WEST VIRGINIA - A woolly elm bark aphid light on elms, Hardy County. (W. Va. Ins. Sur.). PENNSYLVANIA - Chermes abietis fairly numerous in plantation Norway spruce, Westmoreland County. (Udine).

DISTRIBUTION OF ASIATIC OAK WEEVIL (*CYRTEPISTOMUS CASTANEUS*)

- 347 -



Map compiled in
Plant Pest Survey Section, PPC, ARS, USDA
from State reports received to January 1, 1958,
ARS and USNM records

EUROPEAN EARWIG (Forficula auricularia) - IDAHO - Adults active in gardens in Moscow area, Latah County. (Barr).

HOLLY LEAF MINERS (Phytomyza spp.) - VIRGINIA - Medium on American hollies, Norfolk County (Harrell) and present in trees in Richmond, Henrico County, and Galax, Grayson County (Rowell). OREGON - Approximately 100 acres infested in hill area west of Portland, Multnomah County, April 25. First adults emerged by April 20. (Larson).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - IDAHO - Light infestation on golden willow at Idaho Falls, Bonneville County, mixed with European fruit scale. (Portman). WEST VIRGINIA - Moderate on lilac, Hampshire County, light on blueberry, Marion County. (W. Va. Ins. Sur.). UTAH - Severe on many susceptible hosts, Utah County. (Knowlton).

SCALES - CALIFORNIA - Medium infestation of Pulvinaria occidentalis on Lombardy poplar in Colma, San Mateo County. P. floccifera light on camellia at Atwater, Merced County. Aspidiotus hederæ locally heavy on Francoa at Santa Barbara, Santa Barbara County, medium on olive at Orland, Tehama County and heavy on azalea near Paradise, Butte County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (Hypoderma spp.) - KANSAS - Adult activity reported in north central part of State, April 14-18. (Gates).

CATTLE LICE - OKLAHOMA - Numbers heavy on unsprayed cattle, Custer County. (Hutton). ALABAMA - Bovicola bovis prominent on cattle in Wilcox County. (K. Hays).

A GNAT (Tendipes decorus) - CALIFORNIA - Number of complaints as being numerous in some localities in Alameda and Contra Costa Counties. (Peter).

HORN FLY (Siphona irritans) - ALABAMA - Counts averaged 50 per head on cattle in Wilcox County. (K. Hays). KANSAS - First activity reported on cattle in Rush County. (Gates). On cattle at Brookville, western Saline County (Knapp, April 11) and in Meade County (Marvin). OKLAHOMA - Heavy on cattle in Custer County. (Hutton). Average 10-30 per animal, Payne and Noble Counties. (Howell).

MOSQUITOES - CALIFORNIA - Light trap reports for April 6-12 indicate higher populations than median for same period of 1954-1957. Culiseta inornata constitute bulk of species taken, being reported more often from central coastal areas than elsewhere. Adults and larvae of Culex tarsalis present in large numbers for this time of year in some districts of San Joaquin Valley. (Cal. Coop Rpt.). NEW MEXICO - Abundant and annoying at Truth or Consequences, Sierra County. (N. Mex. Coop. Rpt.).

STORED-PRODUCT INSECTS

KHAPRA BEETLE (Trogoderma granarium) - MEXICO - Inspections conducted during March at Mexicali, Baja California, and Huatabampo and Navajoa, Sonora. Total of 422 inspections made. No positive determinations received on 124 collections submitted during March except for delayed report of a positive determination on property in Ejido Puebla. Nine collections submitted from Sonora all negative. (PPC, Mex. Reg., Mar. Rpt.). Inspections were made on 6 properties in ALABAMA, one in GEORGIA, 6 in MISSISSIPPI, one in OKLAHOMA and 102 in TEXAS. Extensive inspections made of feed dealers in Victoria, Texas.

All inspections negative. (PPC, Sou. Reg., Mar. Rpt.).

BENEFICIAL INSECTS

BIG-EYED BUGS (Geocoris spp.) - IDAHO - Average 2 adults and 5 nymphs per 10 sweeps in red clover near Notus, Canyon County. (Waters). UTAH - Occasional specimen present in alfalfa fields, Washington County. (Knowlton).

HONEY BEE (Apis mellifera) - NORTH CAROLINA - Loss of 40-50 percent of colonies in Surry County due to starvation and other causes. (March 22, Earnest).

PREDATORS - DELAWARE - Podisus maculiventris adults fairly common in clover field, New Castle County. (MacCreary, Conrad). ALABAMA - Several specimens of Chrysopa oculata and LADY BEETLE larvae observed in fields of wheat in Autauga County. (Grimes). LOUISIANA - Predators and parasites reducing numbers of greenbugs and pea aphids in most fields. Syrphid larvae averaged 1 per sweep. (Spink). ILLINOIS - Nabis sp. averages 2 per 100 sweeps in clover and alfalfa in northeastern section and 6 per 100 sweeps in eastern section. (Ill. Ins. Rpt.). WISCONSIN - Lady beetles quite abundant having overwintered in excellent condition, with losses appearing to be at an all-time minimum throughout the State. (Wis. Ins. Sur.). NEBRASKA - Counts in alfalfa and sweetclover fields in eastern third of State averaged 14 nabids, 6 lacewings, 8 lady beetles and 10 Orius per 100 sweeps. MISSOURI - Lady beetles and others average 0-1 per sweep in southwestern areas. (Kyd, Thomas). UTAH - Damsel bugs appearing in Washington County alfalfa fields. (Knowlton). NEW MEXICO - Lady beetle adults and larvae, syrphid flies, damsel bugs and pirate bugs abundant in alfalfa fields. Praon palitans becoming well established in many fields, Dona Ana County. (N. Mex. Coop. Rpt.).

MISCELLANEOUS INSECTS

RED HARVESTER ANT (Pogonomyrmex barbatus) - OKLAHOMA - Active throughout State. (Howell).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - During March, counties and parishes reported infested for first time were Coosa, ALABAMA; Colquitt, GEORGIA; Bossier, LOUISIANA; Sharkey, MISSISSIPPI; Onslow, NORTH CAROLINA; Florence, SOUTH CAROLINA; and Harrison, Gregg and Bexar, TEXAS. Extensions of infestations were reported in Alabama, Arkansas, Florida, Louisiana and Mississippi. (PPC, Sou. Reg., Mar. Rpt.). OKLAHOMA - None found in inspection of McCurtain, Bryan and Pushmataha Counties. (PPC).

MIDGES - WISCONSIN - Heavy flights reported in western areas of the State on April 17. (Wis. Ins. Sur.).

SUGARCANE BEETLE (Euetheola rugiceps) - ALABAMA - Several specimens observed around lights in Lee County, with over 200 collected in a light trap in a 12-hour period. (Ruffin, Lester).

MARCH FLIES - WASHINGTON - Present in abundance in orchards near Malaga, Chelan County. (Ballard).

CORRECTIONS

CEIR 8(17):320 - Under STINK BUGS, should read Nezara viridula instead of Acrosternum hilare.

CEIR 8(17):329 - Under section on coffee, Salenaspidus should read Selenaspidus.

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agrot. yps.	Felt. subt.	Heli. zea	Eueth. rugic.	Perid. marg.	Prod. ornith.	Trich. ni
ALABAMA(County)								
Lee 4/19,22,25	127	15			205			
FLORIDA								
Gainesville 4/23	1			1				
Quincy 4/4	1	1						
ILLINOIS								
Urbana 4/18-24	14					2		
INDIANA(County)								
Tippecanoe 3/10-4/24	27	3				2		
LOUISIANA								
Baton Rouge 4/18-24	6	13	11		55	23	3	5
Franklin 4/18-23	11	2	8			9	1	1
MARYLAND(County)								
Montgomery 4/17-24	1					1		
MISSISSIPPI								
State College*	116	30		2		13	1	
Stoneville*	1278	33	6	3		442	11	3
NEBRASKA								
North Platte 4/13-19						3		
NORTH CAROLINA(County)								
Duplin 4/24	1				7			
SOUTH CAROLINA(Counties)								
Charleston 4/14-27	13	4	1			7	1	
Oconee 4/19-25	58	6			6	4	13	
TENNESSEE(Counties)								
Blount 4/15-21	95	17				18	41	
Cumberland	36	6				23	3	
Greene	16	5				1	2	
Johnson	11	1				1		
Madison	78	1				38		
Maury	184	4				42	4	
Robertson	32	9				14	3	
TEXAS								
Brownsville 4/5-17			380	64		80		32
Greenville 4/1-15	362	50	19	2		100	23	3
Waco 4/19-25	16	3	24	6		50		
Winter Haven 4/8	24	42	36	9		72	12	15

*Two traps State College, 4 traps Stoneville

SUMMARY OF INSECT CONDITIONS - 1957

INDIANA

Compiled by John V. Osmun

Introduction: The year 1957 in Indiana was characterized by conditions of high moisture and slightly lower temperatures, two conditions which combined to produce an abnormal insect season. Rainfall during the spring and early summer was between 3 and 4 inches above normal in most of the State, while early temperatures were 0.5° F. below normal average in the north and as much as 3° F. below in the southern area during a similar period. That the conditions which prevailed were unusual is evidenced by a brief abundance analysis of the 10 insects and other arthropods normally rated by the entomology staff at Purdue University as the most important on crops and trees in Indiana. They are corn earworm, potato leafhopper, European corn borer, cutworms, smaller European elm bark beetle, meadow spittlebug, two-spotted spider mite, codling moth, hessian fly, and aphids. Of these, only the meadow spittlebug, probably the elm bark beetle, and possibly the potato leafhopper were of normal or highly economic importance. Not only were high moisture and less desirable temperatures direct factors, but many host crops had not yet reached a desirable state of growth at periods of normal insect abundance. The year 1957 in Indiana was rather unusual from the standpoint of economically important insects. Populations of principal species were generally lower than normal while several species of other insects became unusually abundant.

Field Crop Insects: CORN EARWORM (*Heliothis zea*) - In 1956 the fall survey showed 50-85 percent of the ears infested in the State. There was no evidence of overwintering as far north as Lafayette. In 1957, based on light trap records and field observation, corn earworm was comparatively low (see tomato fruitworm), with counts ranging from 6.5 percent of the ears infested in the northern counties up to 43 percent in the southernmost counties. EUROPEAN CORN BORER (*Pyrausta nubilalis*) - The 1956 fall survey showed moderate counts in the northern two-thirds of the State both in percent infestation and number of borers per stalk. Spring egg laying was heavy in spots but survival was low. As a result, the first generation was never high, since most of the corn at time of oviposition was small due to weather-incurred delays, and except in northern regions, the intensity of infestation decreased appreciably as the season advanced. Mid-summer moth flight was erratic and the fall larval generation was low except in the northern tier of counties which showed great variation between fields. ARMYWORM (*Pseudaletia unipuncta*) was neither abundant nor destructive in Indiana this year. FALL ARMYWORM (*Laphygma frugiperda*) - Although states immediately to the west had extensive severe damage from this insect in southern counties, Indiana damage was rather restricted to corn in Vanderburgh and Posey Counties. In early August the larvae attacked corn leaves extensively and later entered the tips of the ears causing damage similar to that of the corn earworm. CORN LEAF APHID (*Rhopalosiphum maidis*) was abundant only in scattered areas in corn and grain sorghum. NORTHERN CORN ROOTWORM (*Diabrotica longicornis*) occurred again as an adult pest of stalks and exposed tips of corn in southern Indiana. A NOCTUID caterpillar (*Simyra henrici*) was recorded as feeding on the leaves of corn in appreciable numbers in Newton County. CUTWORMS - General reduction noted over the populations which occurred last year. MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) occurred in record abundance this season. High moisture and rank growth contributed to a population that reached counts of 5 per stem on alfalfa and clover in May in southeastern areas. POTATO LEAFHOPPER (*Empoasca fabae*) started entering the State early in May from the southwest and had achieved wide distribution by the second week in June. Populations were moderately high early in the year,

dropped off appreciably in the middle of August, but rose again to economic numbers late in the same month. TWO-SPOTTED SPIDER MITE (*Tetranychus telarius*) was generally less important economically this season. SPOTTED ALFALFA APHID (*Therioaphis maculata*) - The introduction of this insect into Indiana late in 1956 seemed to indicate that we would have a heavy infestation in 1957. However, this aphid did not appear until the latter part of August. The intensity was low although the area infested extended to include Crawford, Harrison, Floyd, Switzerland, Ohio, Dearborn, Dubois, Orange, Washington, Jefferson, Clark, Lawrence and Jackson Counties. Sullivan, Knox, Daviess, Martin, Gibson, Pike, Posey, Vanderburgh, Warrick, Spencer and Perry Counties were again infested as in 1956. GREEN CLOVERWORM (*Plathypena scabra*) was found to be common on soybeans in west central Indiana with extensive but not serious feeding. PLANT BUG populations, principally *Lygus lineolaris*, *Adelphocoris rapidus*, and *A. lineolatus*, were high especially in the south on alfalfa and other legumes. CLOVER ROOT BORER (*Hylastinus obscurus*) fed extensively but due to high available moisture, stands of clover were able to recover from any injury caused by this insect. LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) was as heavy as in 1956 with 80-90 percent of the stems infested. CLOVER LEAF WEEVIL (*Hypera punctata*) populations were low this year. HESSIAN FLY (*Phytophaga destructor*) infestations were light throughout the State except in Gibson County where a moderate infestation occurred. BEAN LEAF BEETLE (*Cerotoma trifurcata*) - For a number of years this insect has shown an increasing ability to adapt to soybeans. Some fields in the south had up to 25 percent leaf defoliation and nearly that amount occurred in many northern fields. JAPANESE BEETLE (*Popillia japonica*) - For the first time the adults of this insect were abundant enough on crops (soybeans in Newton County) to require chemical control. Statewide recommendations for control were made available this year due to the increasingly wide distribution. GRASSHOPPERS - The fall survey indicated a very low grasshopper population with one or less than one grasshopper per square yard. *Melanoplus femur-rubrum* appeared to be the dominant species. CHINCH BUG (*Blissus leucopterus*) - As expected, did not develop in appreciable numbers in 1957.

Truck Crop Insects: A SAP BEETLE (*Glischrochilus quadrisignatus*) was generally abundant and pestiferous. Economically important in picked strawberries and raspberries readied for market. TOMATO FRUITWORM (*Heliothis zea*) was only moderately destructive with larval populations well below 1956. SQUASH BUG (*Anasa tristis*) was not reported serious. SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*) adults were common on beans, squash, melons, and cucumber - normal. A LOOPER (*Rachiplusia ou*) was severely abundant in mint areas of the northern part of the State. The first-generation larvae, early in July, defoliated up to 50 percent of the leaves of peppermint and spearmint and was also found infesting carrots, corn, and soybeans. The second-generation looper was also abundant and destructive in untreated mint fields.

Fruit Insects: ORIENTAL FRUIT MOTH (*Grapholitha molesta*) was reported as generally severe in sub-standard orchards. CODLING MOTH (*Carpocapsa pomonella*) infestations were moderate to low in most orchards. APPLE APHID (*Aphis pomi*) was of considerable concern to apple growers in the northern part of the State. MITE populations were the lowest in ten years with most activity from the European red mite (*Panonychus ulmi*), although two-spotted spider mite built up toward the end of the season.

Other Fruit Insect Conditions (Reported by D. W. Hamilton)

Insects on Apples: PLUM CURCULIO (*Conotrachelus nenuphar*) adults emerged from overwintering quarters during prolonged warm period prior to bloom; cool weather following bloom prolonged period of adult activity so that heavy cutting occurred to apples at the time of oviposition. Degree of injury varied extensively in commercial orchards. Harvest counts showed between 0.4 and 3.5 percent fruit injured in the better-cared-for orchards and up to 10 percent of the fruit injured in the poorer-cared-for orchards.

CODLING MOTH was more readily controlled than in the past five seasons. Spring-brood moths emerged late and cooler temperatures slowed development of broods. In Indiana most injury occurred south of U. S. Highway 40. Injury in northern area ranged between 0 and 2.0 percent. Where sprays were poorly timed or applied, percent "wormy" in the southern area was from 3 to 10 percent and oftentimes 25 percent. Only two instances where RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was not controlled were observed. In one instance, near Vincennes, at least 75 percent of the apples were injured at harvest. Both EUROPEAN RED MITE and TWO-SPOTTED SPIDER MITE were troublesome in apple orchards but in a lesser degree than during the drought years of 1954 and 1955. European red mite was the more prevalent species observed in all localities. The recommended miticides generally maintained control. ROSY APPLE APHID (Anuraphis roseus) injury was not a problem in the orchards visited. APPLE APHID built up in a few orchards in the northern areas to the extent that control had to be applied. APPLE MAGGOT (Rhagoletis pomonella) was prevented from becoming established in the commercial orchards. Some specimens of apples received from the Peru, Indiana area during late July were infested with STALK BORER (Papaipema nebris). A LEAF MINER, probably Callisto geminatella, caused light injury to apple leaves in one orchard south of Vincennes. PERIODICAL CICADA (Magicicada septendecim) caused severe injury to the apple trees in an area adjacent to Nashville and to young shade trees in and around the city. The infestation was not as widespread as the brood that emerged in the area during 1953. LEAFHOPPER populations were injurious in a few orchards. The predominant species was Erythroneura lawsoniana.

Insects on Peaches: ORIENTAL FRUIT MOTH (Grapholitha molesta) activity increased throughout the area. In orchards where growers omitted sprays or neglected to include materials in the schedule that controlled oriental fruit moth, injury was the most severe observed in the past 8 years. PLUM CURCULIO was well controlled by most growers, but emergence was earlier in relation to fruit development than usual and in the poorer-cared-for orchards control was not as good as in the last two or three years. CAT-FACING INSECTS continued to be a problem in the southern area. Most of the injury is believed to have been caused by stink bugs. Two to five percent of the fruit was probably injured in most better-cared-for orchards. A LEAF ROLLER (Platynota flavedana) was active enough in peach orchards to require control to prevent commercial injury. Both EUROPEAN RED MITE and TWO-SPOTTED SPIDER MITE were present in peach orchards, and populations became large enough to warrant control measures during July and August. PEACH TREE BORER (Sanninoidea exitiosa) and LESSER PEACH TREE BORER (Synanthedon pictipes) were active during the season. Peach tree borer is generally being well controlled in the commercial orchards. Lesser borer injury is readily found in most orchards.

Insects Attacking Nuts: Identification by R. H. Foote of specimens of adult Tephritidae, submitted by E. W. Pape, that were collected in traps or by hand in Indiana on Carpathian walnut trees, showed that they were mostly Rhagoletis suavis. A single specimen of Zonosemata electa was found; however, the host may have been some plant other than walnut.

Tobacco Insects: TOBACCO HORNWORM (Protoparce sexta) was more abundant on tobacco than it has been for some time, some fields being 100 percent infested with one or more larvae per plant. TOMATO HORNWORM (P. quinquemaculata) was only one-tenth as abundant on tobacco as Protoparce sexta. TOBACCO FLEA BEETLE (Epitrix hirtipennis) was moderately abundant, as normal, except in tobacco seed beds where it was economically important. The GREEN PEACH APHID (Myzus persicae) was economically important for the first time in 5 years, doing damage late in the season.

Tree and Shrub Insects: OAK GALLS of several species were recorded in unusual abundance especially on white oak early in the season. FULLER ROSE BEETLE (Pantomorus godmani) was reported for the first time in Indiana (Warrick County) in late September attacking crapemyrtle and forsythia. CATALPA

SPHINX (Ceratomia catalpae) larvae caused unusually heavy defoliation of trees in northern Indiana. ZIMMERMAN PINE MOTH (Dioryctria zimmermani) was first reported in Indiana late in 1956, and became alarmingly abundant in the spring of 1957 in LaPorte County in red and Scotch pines. Moths were in flight early in the fall. ELM LEAF BEETLE (Galerucella xanthomelaena) was again recorded as destructive almost exclusively to Chinese elms especially in central and southern Indiana, although a northward trend is indicated. American elms were almost free of infestation. BAGWORMS (Thyridopteryx ephemeraeformis) continues to be economically very important on shrubs and trees in Indiana. Although not quite as abundant as the record year of 1956, the condition was severe. RED-HEADED PINE SAWFLY (Neodiprion lecontei) was abundant in Owen County in July. SYCAMORE TUSsock MOTH (Halisidota harrisii) was unusually abundant in the Lafayette area causing considerable defoliation. FALL WEBWORM (Hyphantria cunea) was extremely heavy in northern Indiana on black walnut, hickory, wild black cherry and oak. EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) was destructive to buds of Scotch and red pine in LaPorte County in August. YELLOW-NECKED CATERPILLAR (Datana ministra) was severe on multiflora rose and apple. LOCUST LEAF MINER (Chalepus dorsalis) damaged black locust very heavily throughout Indiana in August. MIMOSA WEBWORM (Homadaula albizziae) was abundant on Moraine and thornless honeylocust in the Indianapolis area and south.

Man and Animal and Household Insects: GERMAN COCKROACH (Blattella germanica) is increasing in abundance rapidly due primarily to its widespread resistance to chlordane and change in habits. BROWN-BANDED ROACH (Supella supellectilium) continues to be increasingly important in homes throughout the State. BOXELDER BUG (Leptocoris trivittatus) continued to be important in the fall of the year principally because convenient control measures are unavailable. E. SUBTERRANEAN TERMITE (Reticulitermes flavipes) is apparently increasing in importance due principally to desirable environments provided by new types of house construction. HOUSE FLY (Musca domestica) was unexpectedly low in spite of favorable moisture conditions. FLEAS (Ctenocephalides canis and C. felis) have become a major problem due to the increasing amount of DDT resistance. AMERICAN DOG TICK (Dermacentor variabilis) reached its highest population in many years, being unusually abundant in wooded areas throughout the spring. MOSQUITOES of most common species were unusually abundant throughout the year due to the continuous supply of standing water.

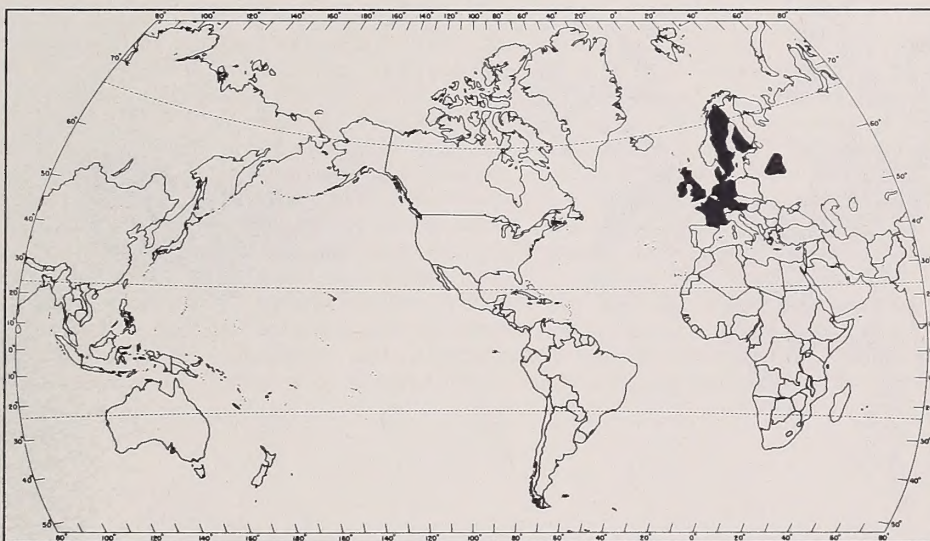
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

RASPBERRY MOTH (Incurvaria rubiella (Bjerkander))

Economic Importance: This bud borer is a major pest of raspberry in Scotland, England, Ireland and Holland. From 50 percent damage to total loss of crop has been recorded in parts of England on raspberries and loganberries. Severe damage also occurs in Holland where 50 percent loss on raspberries is common during outbreaks. The pest was first reported in North America from Fredrickton, New Brunswick, Canada, in 1936. Surveys in that country in 1939 showed the insect was distributed at points in the St. John River Valley for a distance of 70 miles and that it also occurred on Prince Edward Island.

Hosts: Raspberry, blackberry and loganberry.

Distribution: Canada (New Brunswick, Prince Edward Island), Russia (Moscow), British Isles, France, Germany, Holland, Denmark, Austria, Ireland, Sweden and Finland.



General Distribution of Raspberry Moth

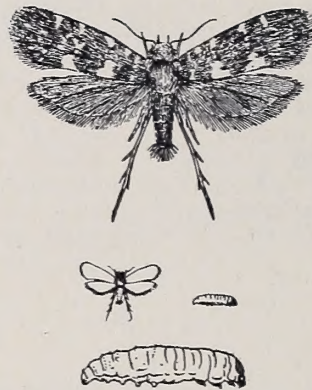
Life History and Habits: In Canada overwintered larvae appeared on canes in late April or early May. A larva may attack several buds before boring into one. Infested shoots, commonly those toward tops of canes, wither and die. Pupation occurs in early June near the tip of the bud. Adults emerge the last half of June and lay eggs on the flowers. Young larvae feed on the receptacles and young fruit, but cause little damage, then drop to the ground (after reaching the second instar in Scotland) and hibernate in debris or the soil.

Description: Adult wing expanse 6-10 mm. Wings dark purplish brown with satin sheen and conspicuous yellow spots. Young larva whitish. Cocoon-like structure in which hibernation occurs is about 2.5 mm. in diameter. Overwintered larva bright pink with blackish head and plate of first segment. Pupa brown.

(Prepared in Plant Pest Survey Section in cooperation with other ARS agencies, and the U. S. National Museum.)
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Raspberry Shoots



Adult and Larva of
Incurvaria rubiella

Figures (except map) from Ministry of Agriculture and Fisheries. 1931.
The raspberry moth. Advisory Leaf. No. 66, 4 pp. London.

